# **Rank Correlation Study on Tourism Websites**



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Usage of the web as a tool in marketing is increasing dramatically. The success of a website depends on certain criteria as found in literature based on earlier research. This study aims to evaluate Kerala tourism websites on these criteria and rank them. The ranking thus got is compared with ranking given by established website ranking agencies like Alexa.com, which ranks sites mainly by popularity of the site. The study is conducted on ranks of top ten tourism websites in the Kerala State. The ranking by both these methods are compared using rank correlation test to establish the adequacy of the identified factors which should naturally lead to the popularity of the website. The identified criteria can be used as components in the evaluation tool kit for website on e-marketing in tourism.

Keywords: Rank, website, criteria, e-marketing, comparison

### 1. Introduction

The Internet is defined as the worldwide interconnection of individual networks operated by government, industry, academia, and private parties. Originally, the Internet served to interconnect laboratories engaged in government research, and since 1994 it has been expanded to serve millions of users for multitude of purposes in all parts of the world. In less than 30 years, the Internet has become the most significant development in communications like the invention of the printing press which deeply revolutionized the way in which we communicate. The number of users connected to the Internet worldwide is estimated to be more than two billion in June 30, 2012 and it is still growing (IWS 2014). India with population of 1,205,073,612 allocated 137 million of Internet users in the year of 2012. Today the Internet continues to grow day by day and user of internet in March, 2014 is estimated 2,937 million (IWS 2014). The Internet and web technologies created a new and unprecedented environment to governments, businesses, educational institutions, and individuals enabling them to webcast any information using multimedia tools. It is seen as proliferation of websites with enormous amount of information (Hassan & Abuelrub, 2008). The very first website is posted in August 1991 by Sir Tim Berners-Lee (Lawson, 2009).

Recently, the earlier form of tourism has changed. Individuals instead of enjoying simple summer vacation want to experience with realism, heritage and distinction (Sharpley& Stone, 2010). Among the different kinds of tourism, heritage tourism is one of the growing segments of travel and tourism industry (Kaufman & Weaver, 2006). Many countries are interested in marketing heritage sites for developing tourism and also creating competitive advantage (Poria &Airey, 2003). Internet plays a significant role in promoting and marketing of all aspects of tourism (Buhalis & Law, 2008). Since tourism is an information-based product, Internet can be used as a means for distributing and promoting tourism services (Law, Leung, & Wong, 2004). Destination websites has helped to promote local, regional, or national destinations (Corigliano & Baggio, 2006). However in tourism industry it is essential to know how persuasive design of destination website can be used to convert potential tourists to real visitors (Loda, Teichmann, & Zins, 2009) Also research related to website evaluations seems lagging and requires further effort(Morrison, Taylor, & Douglas, 2005). It is essential to arrive at a set of criteria for ranking tourism websites as many agencies carry out the same.

# 2. Methodology and Analysis

In this research, the following are carried out:

- a. A set of criteria for website evaluation available in the literature are identified.
- b. The ranking of ten Kerala tourism websites is done using identified criteria by using them in the formula derived by Selim, 2012 for finding ranking index.
- c. Finally, the rank of the websites as determined above is correlated with www.alexa.com ranking for the same. To establish how well ranks based on website popularity matches with criterion based ranking of websites.

## Web Evaluation Criteria

Several evaluative and comparative key items have been included under each criterion that are called "indicators". In Table 1, it can be seen that there are several selected published studies which are reviewed to arrive at the thirteen website evaluation criteria. These criteria are accessibility of visibility, accuracy & credibility, authority, coverage, currency, interactivity, metadata, navigability, orientation & objectivity, privacy, searchability, security and services as shown in Table 1.

Criterion	References
Accessibility & Visibility	(Christy, 2002; Coggins, 2005; Deoghuria, Sinha, &Sinha 2010; ; Drèze, &Zufryden, 2004; Iler, 2006; Kalaivani, Prasath, Buvanesvari, &Megala, 2014; Taher, 2009; Tran, 2009; Vignesh, &Deepa, 2014; Zhang, &Dimitroff, 2005)
Accuracy & credibility	(Alexander & Tate, 1999; Atzeni, Merialdo, & Sindoni, 2002; Beck, 1997; Blakeslee, 2009; Christy, 2002; Dragulanescu, 2002; Ronan Fitzpatrick, 2000)
Authority	(Alexander & Tate, 1999;Blakeslee, 2009;Dragulanescu, 2002; Henderson, 2009; Kapoum, 1998; Misic& Johnson, 1999; Ooi et al., 2010; Smith, 1997, 2001, 2005, 2009)
Coverage	(Apostolou& Economides, 2008; Bauer &Scharl, 2000; Brown et al., 2002; Coggins, 2005; Ronan Fitzpatrick, 2000; Gledec, 2005; Greenwood &Steyn, 2006; Hernandez et al., 2009; Kubly, 1997; Mateos et al., 2001; Miranda Gonzalez &Banegil Palacios, 2004; Prorak, 2010; Provost et al., 2006; Sinha et al., 2001; Wilson, 2010)
Currency	(Alexander & Tate, 1999; Beck, 1997; Blakeslee, 2009; Brown et al., 2002; Christy, 2002; Dragulanescu, 2002; Greenwood & Steyn, 2006; L. Hassan & Abuelrub, 2008; Henderson, 2009; Kapoum, 1998; Kubly, 1997; Misic& Johnson, 1999; Ooi et al., 2010; Prorak, 2010; Provost et al., 2006; Queensland University of Technology, 2010; Saatçioğlu et al., 2006; Smith, 1997, 2001, 2005, 2009; Tran, 2009)
Interactivity	(Ataloglou& Economides, 2009; Bauer & Scharl, 2000; Ronan Fitzpatrick, 2000; L. Hassan & Abuelrub, 2008; Pallas & Economides, 2008; Tran, 2009)
Metadata	(Eschenfelder et al., 1997; Ronan Fitzpatrick, 2000; Smith, 2001)
Navigability	(Ataloglou& Economides, 2009; Atzeni et al., 2002; Bauer &Scharl, 2000; Dragulanescu, 2002; L. Hassan &Abuelrub, 2008; Hernandez et al., 2009; Mateos et al., 2001; Miranda Gonzalez &Banegil Palacios, 2004; Misic& Johnson, 1999; Nielsen &Tahir, 2001; Ooi et al., 2010; Provost et al., 2006; Saatçioğlu et al., 2006; Sinha et al., 2001; Tran, 2009; Viehland& Zhao, 2008b; Wilson, 2010)
Orientation &Objectivity	(Ataloglou& Economides, 2009; Atzeni et al., 2002; Beck, 1997; Blakeslee, 2009; Brown et al., 2002; Christy, 2002; Coggins, 2005; Dragulanescu, 2002; Eschenfelder et al., 1997; Ronan Fitzpatrick, 2000; Greenwood & Steyn, 2006; L. Hassan & Abuelrub, 2008; Henderson, 2009; Kapoum, 1998; Provost et al., 2006; Saatçioğlu et al., 2006; Smith, 2001; Tran, 2009)
Privacy	(L. Hassan & Abuelrub, 2008; Smith, 1997, 2001, 2005)
Searchability	(Atzeni et al., 2002; Coggins, 2005; Misic& Johnson, 1999; Tran, 2009)
Security	(Ataloglou& Economides, 2009; Smith, 2001)
Services	(Apostolou& Economides, 2008; Atzeni et al., 2002; Barnes & Vidgen, 2003; Pallas & Economides, 2008; Tran, 2009)

**Table 1** Sample of Evaluation Criteria Research (Selim, 2012)

#### Website Compliance Scoring Scheme

For each criterion (indexed by i) of the thirteen criteria, there is a total number of indicators  $I_i$  with the possibility of each to exist (Yes), not exist (No), or not applicable (NA) with respect to the assessed website as shown in Appendix 1. For each criterion i there is a number of indicators  $Y_i$  that exist,  $N_i$  that do not exist, and  $NA_i$  that are not applicable. The criterion compliance score  $C_i$  can be measured by the percentage of the existing indicators with respect to the total number of existing and not-existing indicators. The overall website compliance score W can be measured by the ratio between overall number of existing indicators as shown below as developed by Selim, 2012:

$$C_i = \frac{Y_i}{I_i - (NA)_i} \quad \forall i$$

$$W = \frac{\sum_{i=1}^{13} Y_i}{\sum_{i=1}^{13} I_i - \sum_{i=1}^{13} (NA)_i}$$

#### 3. Analysis of Selected Kerala Tourism Websites

By searching in google.com fifty five tourism websites have been identified and the top ten Kerala tourism websites are selected, Out of fifty five websites list, the top ten websites have been selected by checking the rank in www.alexa.com. Only the top ten websites are analyzed in this paper. Top ten websites are given to an expert Internet user and web developer, to collect data about websites. The evaluator is briefed on the study objectives and given the website assessment form (Appendix 1).Two different laptops with different operating platforms have been used to evaluate the websites. The evaluator performed the assessment then filled the form for every selected website. The number of existing, not-existing, and not applicable indicators are counted and summarized in Appendix 1.

Among the top ten websites, keralatourism.org is the best website which scored 93%. This website is managed and supported by the state government of Kerala to provide services and information about Kerala, its Districts and major cities. A tourist can find easily any information about the Kerala tourism places in this website, information such as Kerala maps, backwaters, beaches, hill stations and other tourism destinations. It appears that developers of this website tried to observe all the criteria to create a good website.

The website with rank no.2 is keralaholidays.com which scored 80%. It is a tourism service provider that is managed and supported by a private company and provides tour packages, hotel booking and information about tourism destinations. As seen from the results in Appendix 1, the lowest score is for searchability criterion and it is the weakness in the development of most of the tourism websites that have been analysed.

	Table 2 Website Raiking	5
No.	Website	Rank
1	keralatourism.org	93%
2	keralaholidays.com	80%
3	kerala.com	79%
4	karmakerala.com	74%
5	cosmoskerala.com	70%
6	tourstokerala.org	70%
7	keralatourpackages.com	64%
8	keralatravels.com	64%
9	keralahotelandresort.com	55%
10	Ktdc.com	55%

#### Table 2 Website Ranking

#### Alexa.com Ranking

Alexa.com is a website that the base is in California and it is a subsidiary company of Amazon.com which provides commercial web traffic data. It is founded as an independent company in 1996 and purchased by Amazon in 1999. It contains a toolbar that collects data on browsing behaviour and transmits it to the Alexa website, collected data store and analyse by website and will use to report the company's web traffic. Alexa.com in 2014 mention that they provide traffic data, global rankings and other information on 30 million websites, they also pretending that 6 million people visit their website per month.

It may be noted that the ranks of Alexa.com are dynamic in nature and might keep on changing. Only eight websites are included in the rank correlation test as Alexa ranks are available only for these eight out of the ten top websites chosen for the study.

No	Wabsita	Alexa	Index			
190.	website	Alexa India rank	Rank	Percentage	Rank	
1	keralatourism.org	2,739	1	93%	1	
2	kerala.com	30,469	2	79%	3	
3	keralaholidays.com	33,444	3	80%	2	
4	Ktdc.com	33,864	4	55%	8	
5	keralatourpackages.com	39,680	5	64%	6.5	
6	tourstokerala.org	77,956	6	70%	5	
7	keralatravels.com	86,332	7	64%	6.5	
8	karmakerala.com	188,355	8	74%	4	

Table 3 Websites Rank in Alexa.com and Index

### Comparison of Index Website Rank and Alexa.com Website Ranks

*Spearman's Rank Correlation Coefficient* has been used to compare of two ranks, this method is applied to measure the association between two variables when only ordinal (or rank) data are available. Due to availability of eight website ranks in alexa.com, only eight websites has been compared out of ten top tourism websites.

The finding of the rank comparison resulted in Rank Correlation Coefficient of 0.551 as shown in Table 4.

Table 4 SPSS	Output for Rank	Correlation
1 4		

Correlations			_	
	Alexa	Index		
		Correlation Coefficient	1.000	.551
	Alexa	Sig. (2-tailed)		.157
Speermon's rhe		Ν	8	8
Spearman's mo		Correlation Coefficient	.551	1.000
	Index	Sig. (2-tailed)	.157	
		Ν	8	8

The result shows a moderate degree of positive correlation between alexa.com ranking and the ranking based on index computed using the thirteen identified criteria available in the literature. The null hypothesis that there is no relationship etween the rankings by the two methods could not be rejected to accept the alternate hypothesis that there is a relationship between the two as evident from p value of 0.157 at a level of significance of 5% or 10% in a two tailed test.

# 4. Conclusions

The main purpose of this paper is to rank tourism websites based on specific criteria. These criteria can be used by different persons such as website users, designers, owners, and website developers for improving websites. Also researchers can use this study in improving website usability and their satisfaction. Ranking helps in positioning of the e-marketing tool in promoting tourism in Kerala. It is seen from the rank correlation coefficient of 0.551 that still more factors are to be identified to match the ranking based on website popularity as in www.alexa.com. There is scope for many such studies for identifying more factors which popularizing websites from an e-marketing perspective.

Website		Acces sibilit y	Accur acy	Autho rity	Cover age	Curre ncy	Interacti vity	Metad ata	Navigabi lity	Orienta tion	Priva cy	Searchab ility	Secur ity	Servic es	w
	YES	7	7	5	13	5	8	4	10	6	0	5	0	3	73
keralatourism	NO	0	0	3	0	1	0	0	0	0	0	1	0	0	5
org	NA	0	1	1	0	0	0	0	0	1	4	0	3	0	10
	С	100%	100%	62.5%	100%	83%	100%	100%	100%	100%	0%	83%	0%	100%	93 %
	YES	6	5	3	9	3	6	2	4	2	1	1	0	3	45
	NO	1	2	6	4	2	1	2	6	5	1	5	2	0	37
Ktdc.com	NA	0	1	0	0	1	1	0	0	0	2	0	1	0	6
	С	86%	71%	33%	69%	60%	86%	50%	40%	29%	50%	17%	0%	100%	55 %
	YES	6	8	9	11	5	5	4	9	4	1	3	0	3	68
	NO	1	0	0	2	1	3	0	1	3	2	3	2	0	18
kerala.com	NA	0	0	0	0	0	0	0	0	0	1	0	1	0	2
	С	86%	100%	100%	85%	83%	62.5%	100	90%	57%	33%	50%	0%	100%	79 %
	YES	7	7	5	13	4	8	3	8	4	1	1	2	3	66
keralaholidays	NO	0	0	2	0	2	0	1	2	2	0	5	1	0	15
.com	NA	0	1	2	0	0	0	0	0	1	3	0	0	0	6
	С	100%	100%	71%	100%	67%	100%	75%	80%	67%	100%	17%	67%	100%	80 %
	YES	6	3	5	11	3	8	3	8	4	0	5	0	3	59
karmakerala.	NO	1	3	3	2	2	0	1	2	3	0	1	3	0	21
com	NA	0	2	1	0	1	0	0	0	0	4	0	0	0	8
	С	86%	50%	62.5%	85%	60%	100%	75%	80%	57%	0%	83%	0%	100%	74 %

Website		Acces sibilit y	Accur acy	Autho rity	Cover age	Curre ncy	Interact ivity	Meta data	Navigab ility	Orient ation	Priv acy	Searcha bility	Secu rity	Servi ces	w
tourstokerala.org	YES	6	5	6	12	3	8	2	6	4	0	1	0	3	56
	NO	1	2	3	1	2	0	1	4	3	0	5	2	0	24
	NA	0	1	0	0	1	0	1	0	0	4	0	1	0	8
	С	86%	71%	67%	92%	60%	100%	67%	60%	57%	0%	17%	0%	100%	70 %
	YES	6	5	5	9	3	5	2	6	5	1	1	0	3	51
	NO	1	2	4	2	2	2	2	4	2	0	5	3	0	29
keralatravels.com	NA	0	1	0	2	1	1	0	0	0	3	0	0	0	8
	С	86%	71%	55.5%	82%	60%	71%	50%	60%	71%	100 %	17%	0%	100%	64 %
keralatourpackages	YES	6	6	5	9	2	5	2	6	4	0	1	0	3	49

.com	NO	1	0	3	4	4	2	1	4	1	1	5	2	0	28
	NA	0	2	1	0	0	1	1	0	2	3	0	1	0	11
	С	86%	100%	62.5%	69%	33%	71%	67%	60%	80%	0%	17%	0%	100%	64 %
karalahotelandreso	YES	6	2	4	8	1	5	2	6	4	0	1	0	2	41
	NO	1	3	4	4	3	3	1	4	1	0	5	3	1	33
rt.com	NA	0	3	1	1	2	0	1	0	2	4	0	0	0	14
	С	86%	40%	50%	67%	25%	62.5%	67%	60%	80%	0%	17%	0%	67%	55 %
	YES	6	5	5	11	1	8	3	6	4	0	1	0	2	52
	NO	1	1	2	2	2	0	1	4	1	0	5	3	0	22
cosmoskerala.com	NA	0	2	2	0	3	0	0	0	2	4	0	0	1	14
	С	86%	83%	71%	85%	33%	100%	75%	60%	80%	0%	17%	0%	100%	70 %

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# Appendix A

Tourism website evaluation criteria (Selim, 2012)

Title of Website:			
URL:			
Date evaluated:			
Criterion	YES	NO	NA
Accessibility	·		
1. Existence of website is made known through search tools.			
2. The web site can be accessed publicly (no fees, registration or application required to enter the site)			
3. The web site can be accessed efficiently by users regarding time and network traffic.			
4. The web site has been designed to work well with various internet browsers, and with both Macintosh and PC.			
5. The website does not need "plug-ins" for full functionality.			
6. Website is not taking long to load.			
7. Website is mobile friendly.			
Total			
Accuracy			
1. There is a phone number and postal address to contact for further information. (Just an e-mail address is not sufficient)			
2. Is there a way of determining the achievements of this organization from its inception to the present?			
3. Are there statements that the contents, information, newsletters or policies of the site have the official approval of the organization?			
4. Is the text well written and understandable? (no grammatical, typing, or spelling mistakes)			
5. The website contains cited references to sources used for verification purposes.			
6. Are there links to other credible websites?			
7. Graphs and charts are labelled clearly.			
8. Statement of status of document/website provided: e.g. "under construction" "sample data only"			
Total			
Criterion	YES	NO	NA
Authority			
1. The name of the organization to which the website belongs is clear.			
2. There is a statement of the sponsor(s) of the organization/website.			
3. It is clear who is responsible for the contents of the website.			
4. The author(s) of the information is given or the source it came from is stated.			

5. There is an evidence of example to support the information given.			
6. The sources of any factual information are clearly listed so that they can be verified in another source.			
7. Copyright statements are provided: Identifies owner of intellectual property on site, and conditions for re-use, linking,			
etc. 8 The author can be contacted	-		
0. The JIPL of the website gives an indication of the best site.			
1 The primery purpose of the website is stated			
2. Information matches the mode of stated and israe			
2. Information matches the needs of stated audience.			
3. Includes only necessary and userul information.			
4. Coverage does not overlap within the site	-		
5. Amount of information is significant, comprehensive, and balanced.			
instructions on how to obtain information in another format.			
7. Clear and consistent language style that matches audience: Foreign language and/or special interest sites for foreigners			
8. Positive professional tone: Avoids jargon, inappropriate humour, condescension, accusation and chit chat.			
9. Content does not show bias: Racial, cultural, political, commercial			
10. External links are to appropriate resources, connected with the business of the entity			
Criterion	YES	NO	NA
11. Text is supported by illustrative images.			
12. Does the site provide its own information			
13. Is the web site valuable compared to others			
On the same topic?			
Total			
Currency			
1. The web site is updated frequently.			
1. The web site is updated frequently.         2. The information is current and timely enough to meet the need.			
1. The web site is updated frequently.         2. The information is current and timely enough to meet the need.         3. The pages have been updated in the past three months.			
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<ol> <li>The web site is updated frequently.</li> <li>The information is current and timely enough to meet the need.</li> <li>The pages have been updated in the past three months.</li> <li>There is an indication of when the page was last updated/revised? (Or is there a date on the page to indicate when it was uploaded to the web?)</li> <li>If material is presented in graphs and/or charts and/or tables, is it clearly stated when the data was gathered?</li> <li>All of the pages are having the correct link without any expiration.</li> <li>Total</li> <li>Interactivity</li> <li>Interactive features are provided (e.g. forms, check boxes, list menus, etc.)</li> <li>Do these features work?</li> <li>Do they add value to the web site?</li> <li>All os a dead end when tried</li> <li>The interface is friendly and easy to use</li> <li>The interface is easy to remember</li> <li>There are no error messages</li> <li>Total</li> <li>Criterion</li> <li>Metadata</li> <li>Appropriate metatags are provided, e.g. title, author, description, keywords (with consistent descriptors)</li> <li>Headings are clearly phrased, descriptive, and understandable.</li> </ol>	YES		

4. Terminology and layout are consistent within the headings throughout the website		
Total		
Navigability		
1. Website is organized logically and by anticipated user need.		
2. Navigation options are distinct and spelled out		
3. Conventional navigation models are used: e.g. navigation menu on left hand side in frame or bar		
4. Navigation links are provided from all pages: e.g. to homepage and other key pages, to previous page, top of page in long		
5. A sitemap is provided.		
6. The site map shows how pages are associated with each other		
7. Browsing is facilitated by, for example, menus and/or a site map		
8. Can reach any point in an appropriate number of links: For an average sized site, should be able to reach any point in 3 links.		
9. Search engine provided: Explicitly states what it covers, help is provided with search commands.		
10. Availability of a search engine for website content.		
Total		
Orientation		
1. A website overview is provided: States purpose/mission of website; appropriate to entity's overall mission.		
2. Scope of website is clearly stated: Type and origin of information, audience, dates of coverage, etc.		
3. Services and information provided at the website are described.		
4. `What's new" section: alerts frequent users to changes in content, services, etc.		
5. Instructions for the use of the website are provided: Instructions should avoid being platform/ browser specific.		
6. A liability/status statement warning the user of the nature of information provided at the site, and through any links made from the site, is provided: e.g. whether the information is suitable for access by children, what the official status of information is, that important information may be available through other channels, degree of responsibility for incorrect information, etc.		
7. Does the resource fulfil the stated purpose of the web site?		
Total		
Privacy		
1.Users' privacy rights are protected		
2. Explicit statement on how users' privacy rights are protected: e.g. extent to which site-use information is provided to others, or made public.		
3. Exchanges of information with users are encrypted. Information of concern could be personal information about users, and information about the searches that they have carried out at the site.		
4. Safe payment method has used for money transfers.		
Total		
Searchability		<u> </u>
1. There is a search engine available for searching the resources within the web site.		
2. A piece of information within the site can quickly be found by searching		
3. Does the search engine work effectively (considering time and the use of keywords)?		
4. The resource can be retrieved effectively by the search engine		
5. A help tool for searching is available (instructions or guidelines for identifying search terms and keywords, etc.)		
6. Information can be found within this site without using a search engine		
Security 1. There are areas of the website that are password protocted	<u> </u>	<u> </u>
2. There is a website certificate check	+	
2. The website is secure when necessary		-+
Tatal		

1. Availability of services: open to everyone on Internet, or require fees, restricted to particular sector groups.		
2. Meet needs of user		
3. Fully operational		
Total		

Appendix B Kerala Tourism Websites List

No	Website Name	Alexa Traffic Rank	
		Global Rank	Rank in India
1	keralatourism.org	36,722	2,739
2	Ktdc.com	408,181	33,864
3	kerala.com	224,179	30,469
4	keralaholidays.com	330,405	33,444
5	karmakerala.com	947,189	188,355
6	tourstokerala.org	1,086,147	77,956
7	keralatravels.com	430,015	86,332
8	keralatourpackages.com	397,654	39,680
9	keralahotelandresort.com	3,629,484	-
10	cosmoskerala.com	6,541,360	-